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TITLE: Methods for performing large scale auctions and online negotiations

DATE-ISSUED: November 21, 2000

## INVENTOR-INFORMATION:

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US-CL-CURRENT: 705/37; 705/1, 705/14, 705/26, 705/27, 705/35, 705/36, 710/241

## CLAIMS:

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. A method for conducting continuous auctions for continuous sale of identical items over a computer network consisting of plurality of buyers and at least one seller, the method comprising the following steps:

communicating seller information including an estimated time interval to the next auction decision;

accepting buyer information for each of said buyers including a bid price, a bid entry time, a bid duration, and an intended purchase volume; and

dynamically scheduling a next auction through determining a response time for said buyers by using said buyer information, said scheduling adjusted in a manner such that buyers are retained in said auction for as long as Possible.

2. The method of claim 1, further comprising the step of dynamically selecting at least one auction winner from among said buyers, said bid price of said auction winner being within said bid duration.

3. The method of claim 2, wherein said seller information further comprises an asking price, and time limits within which said bid price is to be submitted.

4. The method of claim 3, wherein if said bid duration is not entered, said time limits will be accepted as said bid duration.

5. The method of claim 4, further comprising the step of displaying status information on computer terminals of said buyers, said status information comprising: a current best bid price, said bid price, and said seller information.
6. The method of claim 5, wherein said dynamically selecting step further comprises the steps of:
- a. ascertaining all said buyers for whom said bid price is higher than said asking price;
  - b. relaxing said bid price by a predetermined amount and evaluating said bid price for each of said buyers;
  - c. computing arrival and defection times of said buyers, based on said bid entry time and said bid duration, to determine said buyers having a lowest value of a sum of said arrival and defection times; and
  - d. declaring said auction winner based on steps a) through c) and said intended purchase volume.
7. The method of claim 6, wherein said estimated time interval is determined by following steps:
- determining a number of premium buyers for whom said bid price is above a predefined market premium;
- calculating a maximum time before which a predefined percentage of said premium buyers will not expire;
- calculating a target queue length using average bid response intervals for the premium buyers and said target queue length and determining whether a true queue length differs from an expected queue length by more than a predefined threshold; and
- readjusting a target time at which said auction winner will be selected.
8. The method of claim 7, wherein said target time readjusting rate is based on a predefined interval set by said seller.
9. The method of claim 8, wherein said estimated time interval is determined at the beginning of each said estimated time interval.
10. The method of claim 9, wherein said estimated time interval is determined at periodic time intervals which are larger than said estimated time interval.
11. The method of claim 10, wherein said estimated time interval is determined at periodic time intervals which are smaller than said estimated time interval.
12. The method of claim 11, wherein said seller information further comprising a minimum bid price.
13. The method of claim 12, wherein said minimum bid price is provided by calculating results of previous auctions.

14. The method of claim 13, wherein said minimum bid price is a seller specified default price.

15. The method of claim 14, wherein said bid price is accepted only if it is higher than said minimum bid price, and is within said time limits.

16. The method of claim 15, wherein said target time readjusting rate is based on a queuing model using an arrival rate for said bidders, an average bid expiry time and a target queue length, said model guaranteeing a certain rate of defection of said buyers.

17. A computer program device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform method steps for conducting continuous auctions for continuous sale of identical items over a computer network consisting of plurality of buyers and at least one seller, the method comprising the following steps:

communicating seller information including an estimated time interval to the next auction decision;

accepting buyer information for each of said buyers including a bid price, a bid entry time, a bid duration, and an intended purchase volume; and

dynamically scheduling a next auction through determining a response time for said buyers by using said buyer information, said scheduling adjusted in a manner such that buyers are retained in said auction for as long as possible.

18. The method of claim 17, further comprising the step of dynamically selecting at least one auction winner from among said buyers, said bid price of said auction winner being within said bid duration.

19. The method of claim 18, wherein said seller information further comprises an asking price, and time limits within which said bid price is to be submitted.

20. The method of claim 19, wherein if said bid duration is not entered, said time limits will be accepted as said bid duration.

21. The method of claim 20, further comprising the step of displaying status information on computer terminals of said buyers, said status information comprising: a current best bid price, said bid price, and said seller information.

22. The method of claim 21, wherein said dynamically selecting step further comprises the steps of:

a. ascertaining all said buyers for whom said bid price is higher than said asking price;

b. relaxing said bid price by a predetermined amount and evaluating said bid price for each of said buyers;

c. computing arrival and defection times of said buyers, based on said bid entry time and said bid duration, to determine said buyers having a lowest value of a sum of said arrival and defection

times; and

d. declaring said auction winner based on steps a) through c) and said intended purchase volume.

23. The method of claim 22, wherein said estimated time interval is determined by following steps:

determining a number of premium buyers for whom said bid price is above a predefined market premium;

calculating a maximum time before which a predefined percentage of said premium buyers will not expire;

calculating a target queue length using average bid response intervals for the premium buyers and an arrival rate of the premium bidders and determining whether a true queue length differs from an expected queue length by more than a predefined threshold; and

readjusting a target time at which said auction winner will be selected.

24. The method of claim 23, wherein said target time readjusting rate is based on a predefined interval set by said seller.

25. The method of claim 24, wherein said estimated time interval is determined at the beginning of each said estimated time interval.

26. The method of claim 25, wherein said estimated time interval is determined at periodic time intervals which are larger than said estimated time interval.

27. The method of claim 26, wherein said estimated time interval is determined at periodic time intervals which are smaller than said estimated time interval.

28. The method of claim 27, wherein said seller information further comprising a minimum bid price.

29. The method of claim 28, wherein said minimum bid price is provided by calculating results of previous auctions.

30. The method of claim 29, wherein said minimum bid price is a seller specified default price.

31. The method of claim 30, wherein said bid price is accepted only if it is higher than said minimum bid price, and is within said time limits.

32. The method of claim 31, wherein said target time readjusting rate is based on a queuing model utilizing an arrival rate for said bidders, an average bid expiry time and a target queue length, said model guaranteeing a certain rate of defection of said buyers.

33. A method for conducting continuous auctions for continuous sale of identical items over a computer network consisting of plurality of buyers and at least one seller, the method comprising the following steps:

communicating seller information including an estimated time interval to the next auction decision, and an asking price;

accepting buyer information for each of said buyers including a bid price, a bid entry time, a bid duration, and an intended purchase volume;

ascertaining all said buyers for whom said bid price is higher than said asking price;

adjusting successive estimated time intervals using said buyer information in order to retain buyers having bid prices above said asking price in said auction for as long as possible; and

dynamically selecting at least one auction winner from among said buyers in each interval, based on said buyer information.

34. The method of claim 33, wherein said seller information further comprises time limits within which said bid price is to be submitted.

35. The method of claim 34, wherein if said bid duration is not entered, said time limits will be accepted as said bid duration.

36. The method of claim 35, further comprising the step of displaying status information on computer terminals of said buyers, said status information comprising: a current best bid price, said bid price, and said seller information.

37. The method of claim 36, wherein said dynamically selecting step further comprises the steps of:

relaxing said bid price by a predetermined amount and evaluating said bid price for each of said buyers; and

computing arrival and defection times of said buyers, based on said bid entry time and said bid duration, to determine said buyers having a lowest value of a sum of said arrival and defection times.

38. The method of claim 37, wherein said estimated time interval is determined by following steps:

determining a number of premium buyers for whom said bid price is above a predefined market premium;

calculating a maximum time before which a predefined percentage of said premium buyers will not expire;

calculating a target queue length using average bid response intervals for the premium buyers and an arrival rate of the premium bidders and determining whether a true queue length differs from an expected queue length by more than a predefined threshold; and

readjusting a target time at which said auction winner will be selected.

39. The method of claim 38, wherein said target time readjusting rate is based on a predefined interval set by said seller.
40. The method of claim 39, wherein said estimated time interval is determined at the beginning of each said estimated time interval.
41. The method of claim 40, wherein said estimated time interval is determined at periodic time intervals which are larger than said estimated time interval.
42. The method of claim 41, wherein said estimated time interval is determined at periodic time intervals which are smaller than said estimated time interval.
43. The method of claim 42, wherein said seller information further comprising a minimum bid price.
44. The method of claim 43, wherein said minimum bid price is provided by calculating results of previous auctions.
45. The method of claim 44, wherein said minimum bid price is a seller specified default price.
46. The method of claim 45, wherein said bid price is accepted only if it is higher than said minimum bid price, and is within said time limits.
47. The method of claim 46, wherein said target time readjusting rate is based on a queuing model utilizing an arrival rate for said bidders, an average bid expiry time and a target queue length, said model guaranteeing a certain rate of defection of said buyers.
48. A computer program device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform method steps for conducting continuous auctions for continuous sale of identical items over a computer network consisting of plurality of buyers and at least one seller, the method comprising following steps:
- communicating seller information including an estimated time interval to the next auction decision, and an asking price;
- accepting buyer information for each of said buyers including a bid price, a bid entry time, a bid duration, and an intended purchase volume;
- ascertaining all said buyers for whom said bid price is higher than said asking price;
- adjusting successive estimated time intervals using said buyer information in order to retain buyers having bid prices above said asking price in said auction for as long as possible; and
- dynamically selecting at least one auction winner from among said buyers in each interval, based on said buyer information.
49. The method of claim 48, wherein said seller information further comprises time limits within which said bid price is to be submitted.

50. The method of claim 49, wherein if said bid duration is not entered, said time limits will be accepted as said bid duration.

51. The method of claim 50, further comprising the step of displaying status information on computer terminals of said buyers, said status information comprising: a current best bid price, said bid price, and said seller information.

52. The method of claim 51, wherein said dynamically selecting step further comprises the steps of:

relaxing said bid price by a predetermined amount and evaluating said bid price for each of said buyers; and

computing arrival and defection times of said buyers, based on said bid entry time and said bid duration, to determine said buyers having a lowest value of a sum of said arrival and defection times.

53. The method of claim 52, wherein said estimated time interval is determined by following steps:

determining a number of premium buyers for whom said bid price is above a predefined market premium;

calculating a maximum time before which a predefined percentage of said premium buyers will not expire;

calculating a target queue length using average bid response intervals for the premium buyers and an arrival rate of the premium bidders and determining whether a true queue length differs from an expected queue length by more than a predefined threshold; and

readjusting a target time at which said auction winner will be selected.

54. The method of claim 53, wherein said target time readjusting rate is based on a predefined interval set by said seller.

55. The method of claim 54, wherein said estimated time interval is determined at the beginning of each said estimated time interval.

56. The method of claim 55, wherein said estimated time interval is determined at periodic time intervals which are larger than said estimated time interval.

57. The method of claim 56, wherein said estimated time interval is determined at periodic time intervals which are smaller than said estimated time interval.

58. The method of claim 57, wherein said seller information further comprising a minimum bid price.

59. The method of claim 58, wherein said minimum bid price is provided by calculating results of



previous auctions.

60. The method of claim 59, wherein said minimum bid price is a seller specified default price.

61. The method of claim 60, wherein said bid price is accepted only if it is higher than said minimum bid price, and is within said time limits.

62. The method of claim 61, wherein said target time readjusting rate is based on a queuing model utilizing an arrival rate for said bidders, an average bid expiry time and a target queue length, said model guaranteeing a certain rate of defection of said buyers.

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L11: Entry 4 of 12

File: JPAB

May 16, 2003

PUB-NO: JP02003141388A  
DOCUMENT-IDENTIFIER: JP 2003141388 A  
TITLE: AUCTION SYSTEM

PUBN-DATE: May 16, 2003

## INVENTOR-INFORMATION:

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*too late*

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AUCSALE:KK

APPL-NO: JP2001342075  
APPL-DATE: November 7, 2001

INT-CL (IPC): G06 F 17/60; G06 F 13/00

## ABSTRACT:

PROBLEM TO BE SOLVED: To provide an auction system capable of contributing to the improvement of the eagerness of a bidder to participate without reducing the eagerness of an unsuccessful bidder to buy.

SOLUTION: A sponsor server 13 performs successful bidding processing on the basis of a bidding price of merchandise received from a bidder's user terminal 15, prepares unsuccessful bidder notification mail including a coupon ticket representing discount contents usable at a virtual store opened on a web server 17 and transmits the unsuccessful bidder notification mail to the user terminal 15 of an unsuccessful bidder as a result of the successful bidding processing. Therefore, the user terminal 15 of the unsuccessful bidder receives the unsuccessful bidder notification mail including the coupon ticket representing discount contents usable at the virtual store opened on the web server 17.

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Feb 5, 2001

NOVELTY - A mutual aid type auction method wherein the minimum bidding price is variable according to the numbers of participators is provided to give participators an opportunity that they can purchase goods at a low price formed by two factors of participation and competition and to return part of entry fees to them even though they fail to be awarded.

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<u>L4</u>	L3 and (bidder same (lost or fail) same (prize or award or reward or incentive or coupon))	7	<u>L4</u>
<u>L3</u>	(bid\$ same (award\$ or reward or prize or incentive or coupon) and ((other or different or additional) adj3 (product or item)))	70	<u>L3</u>
	(bid\$ and (award\$ or reward or prize or incentive or coupon) and ((other or		

L2 no\$ or additional) adj3 (product or item)))

243 L2

L1 (bid\$ and (award\$ or reward or prize or incentive or coupon))

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